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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,969	08/29/2000	Robert L. Thornton	SIROS-020	8650

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DISCOVISION ASSOCIATES
INTELLECTUAL PROPERTY DEVELOPMENT
2355 MAIN STREET, SUITE 200
IRVINE, CA 92614

EXAMINER

MONBLEAU, DAVIENNÉ N

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/650,969

Applicant(s)

THORNTON ET AL.

Examiner

Davienne Monbleau

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 29 October 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 1, 9 and 20, the preamble fails to limit the invention. Stating only “a near field optical apparatus” without and further limitations in the claim to further define the field of the invention renders the claim overly broad and indefinite.

Further regarding Claims 1, 9 and 20, these are single means claims which render the claims indefinite. The single means (conductive plane) does not appear in combination with any other element.

Regarding Claims 1, 9, 19 and 20, there is no structure to support the claimed device. These claims essentially contain one element, a conductive plane/layer with an aperture. There is no structure in the claims to support the type of device in which it is contained, where in the device it may be located and how it functions within the device. This renders the claims overly broad and indefinite.

Regarding Claims 1 and 19, the phrase “configured to” is vague and does not provide a positive structural limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-31 and 44, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Sun et al. (U.S. Patent No. 5,915,165) and Claisse et al. (U.S. Patent No. 6,084,900). Regarding Claim 1, Shin et al. teach in Figure 2 a device comprising a conductive layer (40) with an aperture (46). Shin et al. do not teach a protrusion in said aperture. Sun et al. teach in Figure 6 that multiple aperture shapes are known in the art (which does not exclude protrusions). It would have been obvious to one of ordinary skill in the art at the time of the invention to alter the aperture shape in Shin et al., as taught by Sun et al., to limit the light emission to a particular mode. (Additionally, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output).

Regarding Claim 9, Shin et al. teach in Figure 2 a device comprising a light source (34), a conductive layer (40) with an aperture (46). Shin et al. do not teach a protrusion in said aperture. Sun et al. teach in Figure 6 that multiple aperture shapes are known in the art (which does not exclude protrusions). It would have been obvious to one of ordinary skill in the art at the time of the invention to alter the aperture shape in Shin et al., as taught by Sun et al., to limit the light emission to a particular mode. (Additionally, Claisse et al. teach in column 5 lines 5-30 that the aperture shape and size affects the mode output).

Art Unit: 2828

Regarding Claim 19, Shin et al. teach in Figure 2 a semiconductor laser apparatus comprising an emission facet having a conductive surface (40) with an aperture (46). Shin et al. do not teach a protrusion in said aperture. Sun et al. teach in Figure 6 that multiple aperture shapes are known in the art (which does not exclude protrusions). It would have been obvious to one of ordinary skill in the art at the time of the invention to alter the aperture shape in Shin et al., as taught by Sun et al., to limit the light emission to a particular mode. (Additionally, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output).

Regarding Claim 20, Shin et al. teach in Figure 2 an optical apparatus comprising a conductive plane (40) with an aperture (46). Shin et al. do not teach slots. Sun et al. teach in Figure 6 that multiple aperture shapes are known in the art (which does not exclude slotted apertures, which may act as two separate apertures.). It would have been obvious to one of ordinary skill in the art at the time of the invention to alter the aperture shape in Shin et al., as taught by Sun et al., to limit the light emission to a particular mode. (Additionally, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output).

Regarding Claim 30, Shin et al. teach in Figure 2 a semiconductor laser device comprising an active region (34), a first reflective region (36), a second reflective region (32), and an emission face on the first reflective region (36) with a reflective, conductive layer (40) and an aperture (46). Shin et al. do not teach that said aperture extends into said first reflective region. Claisse et al. teach in Figure 2 a semiconductor laser comprising an aperture (51) extending through a first reflective region (26). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the aperture in Shin et al., as taught by Claisse et al., to provide a stable single high order mode laser source. Shin et al. do not teach a protrusion

Art Unit: 2828

in said aperture. Sun et al. teach in Figure 6 that multiple aperture shapes are known in the art (which does not exclude protrusions). It would have been obvious to one of ordinary skill in the art at the time of the invention to alter the aperture shape in Shin et al., as taught by Sun et al., to limit the light emission to a particular mode. (Additionally, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output).

Regarding Claims 2-8, 10-16, and 31, as mentioned above, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output. Sun et al. teach in the abstract that the aperture shape defines and controls the current path. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the size and shape of said aperture since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claim 17, Shin et al. teach that said conductive layer may comprise metal (44).

Regarding Claim 18, Shin et al. further teach in Figure 2 an active region (34), a first reflective region (36) and a second reflective region (32), wherein said conductive layer (40) is adjacent an outer surface of said first reflective region.

Regarding Claims 21-29, as mentioned above, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output. Sun et al. teach in the abstract that the aperture shape defines and controls the current path. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the relative length, width and location of said slots and connector regions since it has been held that discovering an optimum value of a

Art Unit: 2828

result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Sun et al. (U.S. Patent No. 5,915,165) and Claisse et al. (U.S. Patent No. 6,084,900), as applied to Claim 30 above, and further in view of Prior Art Figure 27. Regarding Claim 32, Shin et al. teach in Figure 2 that said reflecting regions (32 and 36) may have alternating layers, but do not teach Bragg layers. Prior Art Figure 27 teaches that said reflective regions have a plurality of distributed Bragg mirrors, which would serve the same purpose as the reflecting layers in Shin et al.

Regarding Claims 33 and 34, Claisse et al. teach that an area under said aperture has a smaller number of mirrors and lower reflective than does an area surrounding said aperture.

Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Sun et al. (U.S. Patent No. 5,915,165) and Claisse et al. (U.S. Patent No. 6,084,900), as applied to Claim 30 above, and further in view of Sun (U.S. Patent No. 6,144,682). Regarding Claim 35, Shin et al. do not teach an additional semiconductor layer. Sun teaches in Figure 1 a semiconductor contact layer (124) above a first DBR region (114). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a contact layer in Shin et al., as taught by Sun, to provide efficient electrical conductivity between the upper metal layer and the cavity region of the laser.

Regarding Claim 36, Sun teaches in Figure 1 an oxide layer (138) above said semiconductor contact layer (124).

Claims 37-43, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Claisse et al. (U.S. Patent No. 6,084,900). Regarding Claim 37, Shin et al. teach in Figure 2 a semiconductor laser device comprising an active region (34), a first reflective region (36), a second reflective region (32), and an emission facet on the first reflective region (36) with an aperture (46). Since said first and second reflective regions have different impurities, they have different conductivities. Shin et al. do not teach that said aperture extends into said first reflective region. Claisse et al. teach in Figure 2 a semiconductor laser comprising an aperture (51) extending through a first reflective region (26). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the aperture in Shin et al., as taught by Claisse et al., to provide a stable single high order mode laser source. Shin et al. do not the size of the aperture. Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine a specific aperture size since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claim 40, Shin et al. teach in Figure 2 a conductive layer (44).

Regarding Claim 41, Claisse et al. teach that an area under said aperture has a smaller number of mirrors and lower reflective than does an area surrounding said aperture.

Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Claisse et al. (U.S. Patent No. 6,084,900), as applied to Claim 38 above, and further in view of Sun (U.S. Patent No. 6,144,682). Regarding Claim 39,

Art Unit: 2828

Shin et al. do not teach an additional semiconductor layer. Sun teaches in Figure 1 a semiconductor contact layer (124) above a first DBR region (114). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a contact layer in Shin et al., as taught by Sun, to provide efficient electrical conductivity between the upper metal layer and the cavity region of the laser.

Regarding Claim 36, Sun teaches in Figure 1 an oxide layer (138) above said semiconductor contact layer (124).

Claims 42 and 43, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Claisse et al. (U.S. Patent No. 6,084,900), as applied to Claim 30 above, and further in view of Prior Art Figure 27. Regarding Claim 42, Shin et al. teach in Figure 2 that said first and second reflection regions (32 and 36) have opposite doping (n-type and p-type), but do not teach quarter wave pairs. Prior Art Figure 27 teaches that said upper reflective region comprises a plurality of p-doped quarter wave layer pairs (120) and that said lower reflective region comprises a plurality of n-doped quarter wave layer pairs (120). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a specific type of reflective mirrors in Shin et al., as taught by Prior Art Figure 27, to achieve a specific output.

Regarding Claim 43, Claisse et al. teach that an area under said aperture has a smaller number of mirrors and lower reflective than does an area surrounding said aperture.

Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (U.S. Patent No. 5,753,941) in view of Claisse et al. (U.S. Patent No. 6,084,900), as applied to Claim 30 above, and further in view of Sun et al. (U.S. Patent No. 5,915,165). Shin et al. do not teach a

Art Unit: 2828

protrusion in said aperture. Sun et al. teach in Figure 6 that multiple aperture shapes are known in the art (which does not exclude protrusions). It would have been obvious to one of ordinary skill in the art at the time of the invention to alter the aperture shape in Shin et al., as taught by Sun et al., to limit the light emission to a particular mode. (Additionally, Claisse et al. teach in column 5 lines 5-30 that the aperture size affects the mode output).

Response to Arguments

Applicant's arguments with respect to claims 1-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 5,245,622 and US 6,365,427.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Davienne Monbleau

DNM

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